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ABSTRACT

This study examined the effects of race on first-year retention at York University (Ontario). Data were obtained from student surveys conducted in 1993, 1994, and 1995, involving a total of 1,864 first-year students, along with administrative records. The study found that the number of black students who left the university because of poor academic standing was almost twice that for any other group. However, an analysis of data on students who left the university in good and poor academic standing indicated no significant racial differences. It was found that grade point average (GPA) was the primary determinant of enrollment status for black and East Indian students, while for students of Chinese and "other" origins, GPA and the value placed upon obtaining a degree were determining factors of enrollment status. For students of European origin, Ontario Academic Credit marks in high school, GPA, academic involvement, and the value placed upon obtaining a degree were determining factors of enrollment status, in line with a student integration model of retention. (Contains 34 references.) (MDM)

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INSTITUTE FOR SOCIAL RESEARCH

RACE AND FIRST YEAR RETENTION ON A CANADIAN CAMPUS

J. PAUL GRAYSON

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Race and First Year Retention On a Canadian Campus

J. Paul Grayson

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The following is a working paper.

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Other Publications on York Students

Who Goes Where: An Exploratory Study of
Recent York Graduates
J. Paul Grayson (1997)

Racial Origin and Withdrawal From University
J. Paul Grayson (1997)

Who Gets Jobs? Initital Labour Market Experiences
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Response Effects: Variations in University Students' Satisfaction by Method of Data Collection
David A. Northrup and Michael Ornstein (1993)

Student Withdrawals at York University: First and Second Year Students, 1984-85
Gordon Darroch, David A. Northrup and Mirka Ondrack (1989)

Summary

Canada in general, and Toronto in particular, are experiencing increased immigration of individuals from non-European countries. As a result, it is important to examine the experiences of such individuals in major institutions such as universities. Unfortunately, Canadian researchers have yet to undertake this responsibility. Where research of this nature has been conducted in the United States, it has been found that particularly Black students and those of Hispanic origin have far lower retention rates than White students and those of Asian origin.

In this article, attention will focus on the first year retention, and possible explanations for the retention of students with various racial origins at York University. Information for the study was obtained through end-of-year surveys carried out in 1993, 1994, and 1995 and from administrative records. As will be seen, while differences in retention rates of students of diverse racial origins are small, potential explanations for retention vary among groups.

Introduction

In the United States, research has demonstrated that the first year retention rate of Black and Hispanic students is lower than that of Whites and students of Asian origin. Whether or not the same is true in Canada is impossible to say: the relevant research has yet to be done. As one step in this direction, this article examines the first year retention of students of different racial groups at York University. Information for the study was collected from end-of-year surveys and from administrative records.

The American Situation

In the United States it is well documented that six year graduation rates for Blacks, Hispanics, and American Indians are lower than for Whites and Asians. For example, among students entering large institutions between 1984 and 1988, only 34% of Blacks, 32% of American Indians, and 43% of Hispanics had graduated six years later. The figures for Whites and Asian Americans were 57% and 64% respectively (NCES, 1993).

Much of the overall attrition rate in American universities is accounted for by students who fail to return for a second year. For example, for 67 institutions in the United States, Smith (1995:5) shows that the first year attrition rates for Blacks, American Indians, and Hispanics were 27%, 26%, and 31% respectively. The rate for what are characterized as 'other ethnic groups' was only 18%.

A number of explanations have been offered for varying attrition rates such as the foregoing. For example, the socio-economic status of Blacks, American Indians, and Hispanics is usually lower than that of White and Asian American students (Loo and Rolison, 1986:58; Prillerman et al, 1989:202; Nettles, 1991:87). Moreover, Blacks and Chicanos may experience hostility on predominantly White campuses (Patterson, et al, 1984; Loo and Rolison, 1986; Sedlacek, 1987; White and Sedlacek, 1987). Frequently, hostility is linked to outcomes like high attrition for certain groups (Jackson et al, 1991; Nettles, 1991; Smedley et al, 1993:444).

The Canadian Situation

In Canadian universities, on-going systematic information is collected on neither attrition rates nor race[1]; however, some information on the former is provided by

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[1] Although 'race' should be defined in terms of physiological characteristics such as skin colour and hair texture, quite frequently the term is used in a way that includes ethnic characteristics such as language and other elements of culture. For example, while 'Chinese' is an ethnic category, it is often used as a race label. Given the frequency of the

Gilbert (1991) and Wong (1994:13). In a background paper for the Commission of Inquiry on Canadian University Education the former estimates that after five years the non-completion rate for university undergraduates is approximately 42%. The latter shows that among 13 universities (there are only 55 in all of Canada), the average first year attrition rate is approximately 24%; however, the range is from 12% to 44%.

Despite the unavailability of data on both attrition rates and race, recent immigration patterns have led to a situation in which information on each is of increasing importance. Between 1981-91 the numbers of African and Middle Eastern immigrants to Canada increased by approximately 400%; Asian/Pacific immigrants by 300%; and Central/South American immigrants by 200%. Over the same period the number of immigrants from the United States and Europe remained relatively constant. As a result of immigration patterns such as these it is estimated that in 1991 25% of the population of Metro Toronto was made up of 'visible minorities'. By 2001 the figure will be 45% (Samuel, 1992:34-35).

In view of recent immigration patterns, the experience of non-white students in the university system has been of growing concern to politicians and members of the university community. For example, as pointed out in 1992 by Richard Allen, then Minister of Education for Ontario, "we must continue our efforts to develop and improve the climate for under represented groups not only by making universities more accessible, but also by making sure that the necessary supports exist that will allow these individuals to succeed in their studies" (*University of Toronto Bulletin*, March 23, 1992). It is fair to say that when considering the situation of non-white students in Ontario's universities, for many, the common assumption is that, as in the United States, such students are at a disadvantage.

Unfortunately, only one study has been conducted in a Canadian university (York) in which outcomes of the first year are linked to university experiences and race (Grayson, 1995). In this instance it was found that first year experiences vary by race; however, the data do not support the conclusion that the experiences of students of non-European origin are uniform and necessarily negative while those of European background are positive. Moreover, while such experiences may have implications for first year outcomes, the impact of race per se on outcomes - self-assessed intellectual development and knowledge, grade point averages, and intentions to return to the university - is minimal. On average, 63% of students stated the intention of returning to York for a second year and differences among students who were Black, of East Indian, Chinese, 'other', and European origins

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latter usage in both everyday language and research, in this article race will be used in a way that may imply some ethnic as well as racial characteristics.

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were not statistically significant.

There is no way of telling whether or not the findings of this study, which to a degree are contrary to much of the literature on non-Whites in many US universities, can be generalized to other Canadian universities. Nonetheless, it is not implausible that for historical reasons racial dynamics in Canadian universities may be different from those south of the border. For example, as Benjamin (1994:14) points out, in contrast to the United States, Canada had only a short history of slavery and slavery never dominated the mode of production as it did in the American South prior to the civil war. In addition, while the vast majority of Blacks in the United States were born there, a high proportion of Canadian Blacks are recent immigrants from Caribbean countries. More importantly, some evidence indicates that at least one outcome of the university experience, graduation, may not vary by race in Canada. As noted by a report of the Student-Environment Study Group at the University of Guelph (1992:9), while Black and Chicano students in the United States may have lower graduation rates than whites, in Canada, "the university graduation rate among Blacks, Caribbeans, and Central/South Americans is about equal to the general population; the graduation rate among Asian groups is higher than the general population." In both societies some Asians (Chinese, Japanese, Koreans) are similar in that they value education and are upwardly mobile.

While American studies on race relations in universities provide an obvious and welcome benchmark for research carried out in Canadian institutions, because of societal differences such as the above, in Canada, it is necessary to determine the relationships among race, university processes and experiences, and educational outcomes, before deciding on the appropriateness of integrating Canadian findings into American frameworks. In this article, as a step in this broader research agenda, attention will focus specifically on first year retention; various forms of social and academic involvement; and race at York University.

Orientation to Research

The examination of race and retention in the current study was guided, but not determined, by one model and one stream of research. The model focuses on the impact of university or college experiences on specified outcomes, such as retention, with pre-enrollment characteristics held constant. Collectively the insights gained from this research can be referred to as the 'student integration model'. The stream of research deals with different reasons for the retention of White and non-White students. For the sake of convenience in this article this research will simply be referred to as 'differences research': findings in this area are too disparate to embody in a model.

Briefly, the student integration model involves the notion that in residential universities and colleges social and academic involvement may contribute to student

retention. Examples of the former are participation in extra curricular activities and making friends; the latter includes matters like going to classes and attending non-required academic activities. In commuter institutions, however, academic involvement, and particularly academic achievement, is more important than social involvement in ensuring first year persistence. Indeed, social involvement is sometimes at odds with retention. Research relevant to the foregoing points has been conducted by Pascarella et al, 1981; Pascarella et al, 1983; Pascarella and Chapman, 1983; Braxton and Brier, 1989; Gilbert, et al 1989; Dietsche, 1990; Tinto, 1993. A critique of the application of this model to Canadian circumstances has been offered by Corman et al (1992).

Some research indicates that the general principles of the student integration model apply equally to both White and non-White students (Fox, 1986). Other examinations suggest that in addition to the variables noted above, factors external to the university, like family approval, encouragement of friends, and adequate finances, must be considered when examining first year retention. Such considerations should be seen as complimentary rather than contradictory to models focusing on academic and social involvement (Cabrera et al, 1992).

The 'differences research' relevant to the topic under study indicates that explanations for the persistence of minority students may be different than those for majority students; however, results of the research are not consistent. In keeping with emphases on social and academic involvement and the importance of faculty-student contact, Stith (1994), in a study of first year retention, found that "85% of the retained African Americans had contact with faculty members outside of class, but only 66% of the non-retained African Americans had such contacts."

By way of contrast, Tracey and Sedlacek (1984:177) emphasized non-cognitive factors in explaining Black student persistence. They found that in the United States Black students who did not have support from others, self-confidence, or community involvement were the most likely to drop out. Later research by Tracey and Sedlacek (1987) confirmed this general finding. In this instance it was discovered that first year grades are the best predictor of persistence for Whites. For Black students, however, non-cognitive factors - positive self-concept, realistic self-appraisals, preference for long term goals, and leadership - were related to persistence. Similarly, Gloria and Robinson (1994) found that Chicano(a) students with self-confidence and positive perceptions of the university environment were more likely to persist than other Chicano(a) students.

Cabrera and Nora (1994) found that White, not Black, student persistence was explained by such things as goal commitment and academic and institutional commitment. Minority persistence was best explained by grade point average (the reverse of Tracey's and Sedlacek's finding above). In another instance Sedlacek (1987:485) discovered that institutional commitment was more important in

explaining the persistence of Black than White students.

In view of the inconsistencies in findings of the differences research, perhaps the best that can be concluded is that in some institutions factors like social and academic involvement may be important in explaining the retention of students of various races. In other situations factors like non-cognitive variables identified above may be more important. Presumably, the best model would be one in which both sets of factors were considered.

Sources of Information

Located on the northern fringe of Metropolitan Toronto, York University has approximately 40,000 full- and part-time students. Of students in first year, only 10% live in residence on campus and 70% live with their parents. Approximately half of first year students come from families in which the average family income is below the provincial average. Approximately two thirds come from families in which neither parent attended university.

Information for the current study of first year retention at York University was obtained from three surveys and administrative records. In the first survey, conducted in March of 1993, all 494 first year students in the Faculty of Pure and Applied Science were surveyed. The response rate to the survey was 68%. The second survey, conducted in March 1994, involved a sample of first year students in the Faculty of Arts. In total, 802 students completed questionnaires for a response rate of 54%. Finally, in March of 1995, first year students in all faculties (the Faculty of Pure and Applied Science, Arts, Administrative Studies, Environmental Studies, Fine Arts, and Glendon College) were surveyed. With the exception of students in the Faculty of Arts, all first year students were included in the survey. In the Arts faculty, because of its large size, only a sample was drawn. The final sample size of 1864 represents a response rate of 64%.

Information on Ontario Academic Credit (OAC) marks (i.e., final year of high school marks), first year grade point averages (GPA), and enrolment status at the beginning of second year was obtained from administrative records.

In the following analysis, estimates of the racial composition and September 1995 retention rate of students who entered the university in September 1994 will be drawn from the March 1995 sample and administrative records. Because of the relatively small numbers of students who are Black, or of East Indian, Chinese, or 'other' origins, the 1995 sample of students in all faculties was combined with the Science and Arts first year surveys of 1993 and 1994 respectively so that numbers would be sufficient to examine factors contributing to the retention of students of various racial groups.

Retention Rates

In Table 1, retention rates as determined from administrative records are compared to the enrollment statuses of students who responded to the March 1995 survey. Among survey respondents, after weighting to reflect the fact that in all faculties but Arts the entire population was surveyed, at the beginning of second year, 87% of survey respondents were enrolled in the same faculty as at the end of first year. A further 4% had moved to other faculties. In total, these two figures represent a retention rate of 91%. Among survey respondents a further 5% left York in good standing and 5% left in poor standing (i.e., they were debarred).

Administrative records indicate that 81% of all students who were in first year in 1994 returned to the university in 1995. A further 13% left York in good standing while 6% left in poor standing. A comparison between survey results and administrative records indicates that among the latter persisters are over-represented by 10%. Those who left York in good standing are under-represented by 8%. The numbers who left in poor standing, however, are similar in administrative records and the survey. If we can assume non-response does not vary by racial group, survey data can be used as an indicator of the *relative* proportions within each racial group who stay at, or leave, York University.

As there is little incentive for those about to leave the university to respond to a survey, the under-representation of those leaving in good standing is understandable. The fact that students who left in poor standing responded to the survey in numbers proportional to their representation in the population is more difficult to comprehend: such students would have had the least incentive to participate in the survey.

For students who left in good standing, it is not known whether or not they enrolled in other institutions or will return to York at some future date. As a result, while for purposes of this study they can be viewed as York drop-outs, in the wider scheme of things they may be either transfer students or stopouts. As the primary concern of this study is student retention at York, not being able to establish whether students not returning to the university are transfer students or stopouts is not a major hindrance to analysis.

Overall, among the 1994 weighted cohort[2], 7% of students can be described as Black, 3% of East Indian or South Asian origin, 14% of Chinese origin, 14% of 'other' origin, and 63% as 'European' origin. When the 1994 sample is combined

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[2] With the exception of students in the Faculty of Arts, all first year students in various faculties were included in the study. Because of the large size of the Arts faculty, only a sample of Arts students were included in the survey. Data were weighted to reflect this fact.

Table 1: Retention Rates from Records and Survey for 1994 Entering Class in 1995-96

	Records	Survey
Same Faculty		87%
Other Faculty		4%
Sub Total	81%	91%
Left York Good Standing	13%	5%
Left York Poor Standing	6%	5%
Sub Total	19%	10%
Total	100%	101%
Cases	4994	1780

with the earlier samples the unweighted composition of the combined files is 7% Black, 7% East Indian or South Asian, 13% Chinese, 13% other, and 61% European.

The 1995 enrollment status of the 1994 cohort by race is summarized in Table 2. Clearly, among survey respondents, the vast majority of students of all races are located in the same faculty for 1995-96 as at the end of the 1994-95 term. If we combine the numbers of students located in the same faculty with those who have moved to another faculty at York we see that Blacks and students of European origin have the lowest retention rates - 87% and 89% respectively. The rates for East Indian/South Asian, Chinese, and 'other' students are 91%, 94%, and 94% respectively. In one sense, if there is a retention problem, it is one for both Blacks and students of European origin.[3]

The situation changes slightly if figures for those who left York are examined. While there are some fluctuations based on race for students who left York in good standing, the most important figures are for those who left in poor standing. When these data are examined it is evident that the number of Black students who left the university because of poor academic standing - 9% - is almost twice the number as for any other group. However, an analysis (not shown) that examines only those who left the university in good or poor standing reveals that differences between Blacks and all others combined are not statistically significant.

In essence, the data in Table 1 indicate average retention rates at York between first and second year. While there are some fluctuations based on race, differences are not large and in no way compare to differences in the United States. Whether or not similar results would be obtained in other Canadian universities is impossible to say.

Students' Characteristics

It is important to ask if the characteristics and experiences of students who leave the university are comparable to those of students who stay. By asking such questions we may be empowered to develop interventionist strategies that have the result of increasing retention.

Information on the characteristics and experiences relevant to such an inquiry are summarized in Table 3 that includes unweighted data from the 1993, 1994, and 1995 surveys as described earlier. Consistent with the student integration model,

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[3] Although the designation 'Chinese' should be viewed as an ethnic rather than as a racial category, in this study it is used to signify distinct physical characteristics. Similar arguments could be made regarding the categories 'South Asian' and 'East Indian' that in reality are geographical origin characteristics.

Table 2: Enrollment Status of 1994 Entering Class in 1995-96 by Race

(Weighted)

	Black	East Indian or South Asian	Chinese	Other	European
Same Faculty	83%	84%	86%	91%	86%
Other Faculty	4%	7%	8%	3%	3%
Left York Good Standing	4%	5%	2%	1%	7%
Left York Poor Standing	9%	5%	4%	5%	5%
Total	100%	101%	100%	100%	101%
Cases (weighted)	85	40	168	175	1228
Cases (unweighted)	84	42	159	181	1223

When 'Left York Good Standing' and 'Left York Poor Standing' collapsed, chi-square sig. .002

variables included in the table can be divided into pre-entry characteristics, university experiences, and outcomes of these experiences. While questions on many variables found influential in the 'differences research' were not asked in the surveys under discussion, failure of the student integration model to explain retention would suggest that in future studies questions pertinent to the differences research should be posed.

In Table 3, race, gender, family income, the highest education of either parent, and OAC average, can be viewed as pre-entry characteristics. Research referenced earlier indicates that students' backgrounds and high school marks may have implications for first year retention.

The next five variables focus on various aspects of the first year experience. The first three, the belief that class topics are relevant to career success, satisfaction with instruction, and the belief that a wide variety of perspectives are offered in classes, have been associated with desirable outcomes such as intellectual development and high marks (Astin, 1993; Grayson, 1994; 1995). The fourth variable, 'contacts 2 months', refers to the total number of out-of-class contacts of ten minutes or more with professors, teaching assistants etc., and staff, over the previous two months. A number of the studies cited earlier have demonstrated the importance of faculty-student contacts for a number of desirable outcomes. 'Academic involvement 2 months' is the mean standardized score for the number of optional academic activities, such as seminars and lectures, attended in the previous two months; average number of hours per week on campus; number of current courses; percentage of lectures attended; percentage of tutorials etc., attended; and hours per week spent on studies outside of classrooms.

The variable, 'social involvement 2 months', is the mean standardized score for number of sports in which students participate; number of sports events watched since beginning of classes; number of weekly pub visits; number of new friends made since the beginning of classes; and the average hours per week spent with new friends.

The next two variables, degree important and York degree important, can be viewed as a measure of goal commitment. Finally, 'hours paid work per week' measures the number of hours students spend working and GPA refers to first year marks.[4]

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[4] In the literature reference is made to the fact that students are more likely to return for an additional year of studies if at the conclusion of the previous year they indicate their intent to return (Cabrera et al, 1992; Tinto, 1993). While this concept is an integral part of the student integration model, when student retention is the outcome under consideration, a discussion of intention seems tautological. As a result, measures of intention to return were not included in the current analysis. (Not surprisingly, the vast majority of students who say

Table 3: Enrolment Status by Student Characteristics~

	Same Faculty	New Faculty	Left Good Standing	Left Poor Standing	Percent	Cases
*Race**						
Black	82%	3%	5%	11%	101%	124
East Indian	85%	5%	9%	1%	100%	81
Chinese	86%	8%	3%	3%	100%	239
Other	89%	5%	2%	4%	100%	240
European	87%	4%	6%	3%	100%	1879
*Gender**						
Female	87%	4%	6%	4%	101%	1671
Male	88%	6%	4%	3%	101%	963
*Family Income**						
LT $50K	86%	5%	3%	5%	101%	594
$50K to $99K	86%	4%	6%	4%	100%	465
$100K+	80%	4%	13%	4%	101%	166
Highest Ed. Parent						
LT Finish Univ.	88%	4%	5%	3%	100%	1608
Finish Univ.	86%	5%	6%	3%	100%	859
*OAC Average**	79% (6.8)	79% (6.7)	79% (6.0)	75% (4.8)		2417 (6.7)
*Topics Relevant**						
Not at all	85%	4%	8%	4%	101%	84
Hardly	80%	6%	8%	5%	99%	405
Somewhat	89%	4%	5%	3%	101%	1535
Very	89%	4%	3%	4%	100%	444
Satisfied Instruction						
Very Dissatisfied	88%	0%	5%	7%	100%	57
Somewhat Dissatisfied	86%	5%	8%	4%	101%	293
Neither	88%	5%	5%	3%	101%	901
Somewhat Satisfied	88%	5%	4%	3%	100%	1131
Very Satisfied	84%	5%	7%	4%	100%	243
Maximum Cases	2300	123	130	88		

~Figures in parenthesis standard deviations. *Appropriate statistic (chi-square, F) sig. at .05 level or less

Table 3: Enrollment Status by Student Characteristics - Continued~

	Same Faculty	New Faculty	Left Good Standing	Left Poor Standing	Percent	Cases
Wide Range Persp.						
Strongly Disagree	80%	3%	9%	8%	99%	64
Somewhat Disagree	88%	5%	5%	3%	101%	151
Neither	85%	6%	6%	3%	100%	639
Somewhat Agree	88%	4%	5%	3%	100%	858
Strongly Agree	86%	4%	6%	4%	100%	431
*Contacts 2 Months**	0.51 (.67)	0.64 (.79)	0.62 (.81)	0.44 (.65)		2016 (.68)
*Acad. Inv. 2 Months (z-score)**	0.03 (.53)	0.03 (.55)	-0.1 (.60)	-0.48 (.73)		2136 (.54)
Soc. Inv. 2 Months (z-score)	-0.01 (.58)	-0.05 (.57)	-0.06 (.58)	0.01 (.69)		2352 (.58)
*Degree Imp.**						
Not at all	38%	8%	25%	28%	99%	24
Somewhat	73%	6%	16%	6%	101%	219
Very	89%	5%	3%	3%	100%	700
Extremely	89%	4%	4%	3%	100%	1691
*York Degree Imp.**						
Not at all	80%	5%	10%	5%	100%	828
Somewhat	90%	4%	3%	2%	99%	904
Very	89%	5%	3%	3%	100%	605
Extremely	91%	4%	2%	3%	100%	280
*Hours Paid Work Week**	7.9 (8.1)	7.2 (8.2)	8.7 (8.8)	12.5 (8.9)		2597 (8.2)
*GPA**	5.4 (1.6)	6.0 (1.3)	5.9 (1.2)	2.4 (1.1)		2641 (1.6)
Maximum Cases	2300	123	130	88		

~Figures in parenthesis standard deviations. *Appropriate statistic (chi-square, F) sig. at .05 level or less.

It is not the intent to discuss all of the information portrayed in Table 3. An identification of interesting and statistically significant findings will suffice. Perhaps the first finding of interest is that the entering OAC averages of those who would eventually leave the university in poor standing (75%) were considerably below the 79% average of students in all other enrollment categories (the standard deviation for marks was 1.8). This finding suggests academic failure in first year may be in part a function of low high school marks.

Students who left in poor standing had slightly fewer contacts (.44) with faculty, teaching assistants etc., and staff than students who remained in their original faculty (.51), went to a different faculty (.64), or who left in good standing (.62). While these differences are not great, they are consistent with the notion that particularly students who failed academically were less in contact with their professors etc., than were other students. Similarly, students who left in poor standing, with a standardized academic involvement score of -.48,[5] were considerably less involved academically over the previous two months than those who remained in the same faculty (.03), students who went elsewhere in York (.03), and those who left in good standing (-.10).

Information on goal commitment as measured by the extent to which students believed that a degree is important indicates that while students who left in good standing represent only 5% of all students studied, they make up 25% of those who believed that a degree was not important. Similarly, while those who left in poor standing represent 5% of students, they comprise 28% of students indicating that a degree was not important. The latter finding is to be expected. The finding for students who left in good standing may indicate that a sizeable portion did not leave York to enroll in another university.

When information on the importance of a York degree is examined it can be seen that among those who felt that a York degree was not at all important, 10% left in good standing. The numbers who left in good standing who believed that a York degree was somewhat, very, or extremely important were 3%, 3%, and 2% respectively. It is evident that the number of hours per week of paid employment for students who left in poor standing (12.5) are far higher than students who left in good standing (8.7), of students remaining in the same faculty (7.9), and of those in other York faculties (7.2). Finally, when GPA is examined, it is clear that those leaving in poor standing have lower GPAs (2.4) than students remaining in

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they are likely to return to the same faculty do so; the vast majority of students who express the intention to return to York, do return.)

[5] Standardized or z-scores have a mean of 0, and, for most purposes, can be viewed as having a high score of 3 and a low score of -3.

their faculties (5.4), those elsewhere at York (6.0), and those who left in good standing (5.9). Indeed, the GPA of those leaving in good standing is higher than that of students staying pat.

In terms of OAC averages, contacts with faculty etc., academic involvement, hours of weekly work, and GPA, the foregoing suggests that students who left York in poor standing are different from those in the other three categories. By way of comparison, differences among the three remaining categories are relatively small. In terms of the importance of a degree, however, leavers in both categories are more similar to one another than to those who remained at York. This conclusion aside, the information referenced here indicates that lack of integration as measured by contacts and academic involvement (i.e., student experiences) and poor marks may help explain students who leave in poor standing, but not those who leave in good standing. As a result, it is difficult to argue that for all students at York the student integration model is of great assistance in explaining the behaviour of students who leave the university compared to those who stay.

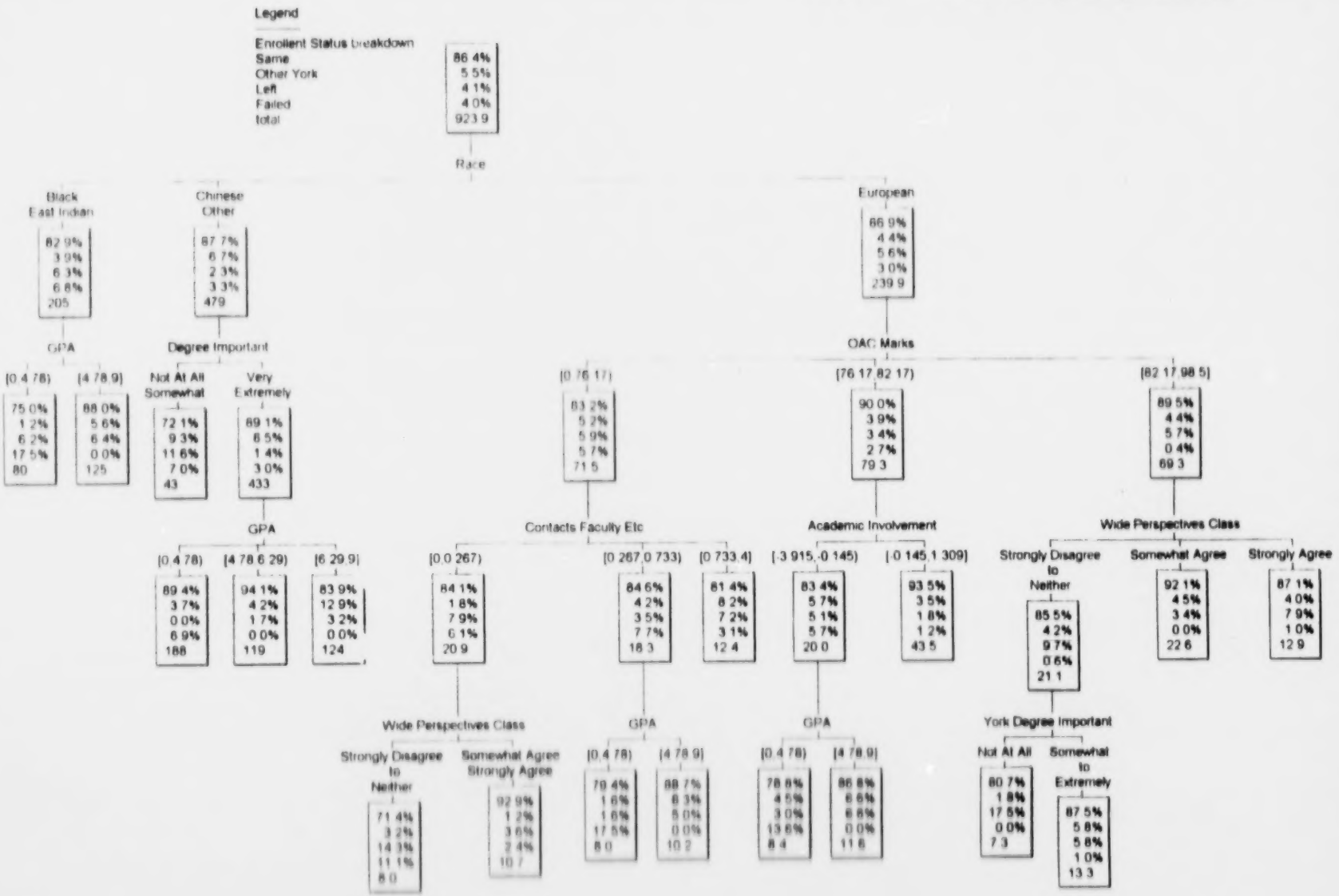
The CART Procedure

While the information in Table 3 provides some general observations regarding retention, further analysis is required to examine the extent to which in combination the table's variables assist in the explanation of the extent to which characteristics and experiences of students contribute to different enrollment statuses. In situations such as these, discriminant analysis is a frequently used analytical tool. Unfortunately, in the current analysis, equality of population covariance matrices, one of the conditions for discriminant analysis, could not be met. As a result, (and fortunately as it turned out) a procedure available through KnowledgeSeeker that utilizes classification and regression trees (CART) was utilized to good effect.

A detailed description of the technique is given by Brieman (1984). For current purposes it is sufficient to know three things. First, the program splits categories of independent variables in ways that yield the greatest statistical significance in the dependent variable. Second, in automatic mode the program will develop a series of splits of independent variables. If this option is not desired, the program permits the analyst to specify the order entry of independent variables. The analyst has the option of choosing from a list provided of all statistically significant splits or of forcing into the analysis a variable that is not statistically significant. Whatever the case, variables entered first represent controls over subsequent variables. The logic of the procedure will be more apparent once analysis begins.

The total number of cases possible for utilization in the combined 1993, 1994, and 1995 unweighted files are 127 Blacks, 81 students of East Indian/South Asian origin, 250 students of Chinese origin, 248 of 'other' origin, and 1958 students of European origin. Because of the relatively large number of cases in the European

Diagram 1: Factors Affecting Retention



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category, and because the number of branches in the classification tree generated by KnowledgeSeeker is in part a function of the number of cases, in order to avoid distortion, the number of European origin cases was weighted back to the second largest group, Chinese. In other words, adjustments were made to reduce the number of students of European origin to 250.

The CART analysis was utilized in the following way. As a first step, having defined enrollment status as the dependent variable, KnowledgeSeeker calculated the most statistically significant splits. From this list, race was chosen as the basis for the first split. For subsequent splits within each racial group, statistically significant variables were chosen for inclusion in order of their being pre-entry characteristics, student experiences, goal commitment, and hours of paid work, as shown in Table 3. For example, if both social involvement and OAC marks were identified as being significant, OAC marks, a pre-entry characteristic, would be the first choice for inclusion. Proceeding in this fashion facilitates an examination of the effect of university experiences after controlling for the impact of pre-entry characteristics. In essence, model building can proceed in much the same way as with stepwise regression. It should be noted that a very conservative .001 level of significance was chosen as the minimal basis of inclusion for all variables.

Race Based Differences

The classification tree that was generated using this procedure is reproduced in Diagram 1. The labels for enrollment status are reproduced to the left side of the top-most node that shows the overall breakdown of enrollment status. The number at the bottom of the node is the number of cases on which the percentages in the node are based. Note that the relatively low numbers are a function of the weighting downward of European origin respondents.

Moving to the race line of the diagram, perhaps the first thing to note is that differences between Blacks and East Indians with regard to enrollment statuses were sufficiently small that they were combined into a single category. The same is true of students of Chinese and 'other' origins.

As suggested in earlier discussion, diagram information on race indicates that while there are racially based enrollment status differences, they are not large. To concentrate on retention in the same or another York faculty, the main concern of this analysis, among Black and East Indian origin students, (83% + 4%) 87% remained at York. The figures for the Chinese and 'other' category, and students of European origin, were 95% and 91% respectively.

Black and East Indian Origin Students

Within the Black and East Indian group statistically different enrolment patterns are found if GPAs are divided into those less than 4.78 (for this and other nodes, the

notation '0,4.78' indicates a range from 0 up to but not including 4.78) and those 4.78 and over. Among Black and East Indian students whose GPAs were lower than 4.78, 75% remained in the same faculty, 1% enrolled elsewhere at York, 6% left in good standing, and 18% left in poor standing. For those with GPAs of 4.78 or higher 88% remained in the same faculty, 6% went to other York faculties, and 6% left in good standing. None of the students in this category left in poor standing. It is worth noting that for this group none of the student involvement variables was of assistance in explaining enrollment status. Overall, it seems that GPA is the primary determinant of enrollment status for Black and East Indian origin students.

Chinese and 'Other' Origin Students

For students of Chinese and 'other' origins the picture is only slightly more complex. For these students, considerable differences can be found depending on the value placed on obtaining a degree. Among Chinese and 'other' students who place little value on obtaining a degree (not at all, somewhat important), only 72% remained in the same faculty. Among students who thought that degree attainment was important (very, extremely), a far higher 89% remained in the same faculty. Also important is that among those least valuing a degree, 12% left the university in good standing. The comparable figure for those valuing a degree is only 1%. Observations such as these suggest that among this group of students valuing a degree may have important implications for retention.

Among Chinese and 'other' students valuing a degree, there are further differences in enrollment statuses related to GPA. The relationship, however, is not monotonic. Among those with low GPAs (0,4.78), 89% remain in the same faculty. A far higher same faculty retention rate (94%) is demonstrated for students with middle range GPAs (4.78,6.29). The lowest same faculty retention rate (84%) is demonstrated by students with high GPAs (6.29,9). Among this group, however, large numbers (13%) transfer elsewhere in York. No doubt their high marks give them options unavailable to students with lower marks. The only group with any students who left in poor standing are those with low GPAs. For this group, valuing a degree was not sufficient insurance against failure. As with the Black and East Indian group, no student involvement variables help explain the enrollment statuses of Chinese and 'other' students.

European Origin Students

When students of European origin are examined, perhaps the most striking initial observation is the presence of variables crucial to the student integration model. While no pre-entry characteristics were significant for the previous groups, statistically significant differences based on OAC marks are found for European students. Most noticeable, and perhaps understandable, is that those entering with low OAC marks (0,76.17) have low same faculty retention rates (83%). The rates for students with medium (76.17,82.17) and high (82.17,98.5) OAC marks are

somewhat higher (90% for each). Conversely, the number of failures is somewhat higher among students with low (6%) than with middle or high OAC marks.

Among students with low OACs, enrollment statuses also vary with another involvement variable, contacts with faculty, teaching assistants etc., and staff. If the numbers of students who stayed in the same faculty are combined with those going elsewhere at York, the relationship between numbers of contacts of ten minutes or more over the previous two months and retention is monotonic: 86%, 89%, and 90% of students with low (0,.27), medium (.27,.73), and high (.73,4) numbers of contacts respectively remained in the same faculty. Although differences are slight, they are consistent with theory.

When students with low contacts are examined separately, it is evident that another variable relevant to the student retention model, the perception that a wide variety of perspectives were offered in class, contributes to our understanding of enrollment status. Among those who strongly disagreed, somewhat disagreed, or neither agreed nor disagreed that a wide variety of perspectives were offered, only 71% remained in the same faculty. The figure for those who somewhat or strongly agreed that they were exposed to a wide range of perspectives was 93%. Conversely, among the former group, 14% left York in good standing and 11% left in poor standing. The relevant figures for the latter group are 4% and 2%. Exposure to a wide variety of perspectives contributes to the retention of European students with low OACs who have low contacts with faculty and others.

To a degree, being exposed to a wide range of perspectives may compensate for low levels of contact. For example, the same faculty retention rate for students with low OACs and low contacts is 93%. This is a far higher same faculty retention rate than for students with the low OACs who had medium or high levels of contact. Findings such as these are important to the degree that it may be easier to ensure that a wide range of perspectives are offered in class than to guarantee a high level of out-of-class contact with faculty, etc.

For students with low OAC marks and medium levels of contacts, enrollment status varies with GPA. For those with low GPAs (0,4.78), 79% remain in the same faculty and 2% transfer to another York faculty. Among students with high GPAs (4.78,9), 89% remain in the same faculty and 6% leave for other York faculties. In total, then, 81% and 95% of those with low and high marks respectively either stay in the same, or move to a different, York faculty. Eighteen percent of students with low marks leave in poor standing.

For students with middle OAC marks, once again, enrollment status varies in a way consistent with predictions of the student integration model. This time, of students with high levels of involvement (z-scores of -.15,1.3), 95% remain in the same faculty and 4% go elsewhere in York. For students with low academic involvement

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(-3.9,-.15), same faculty retention is a lower 83% and transfer to another York faculty is 6%. Conversely, among those low on academic involvement, 5% leave in good and 6% in poor standing. The comparable figures for high academic involvers are 2% and 1% respectively.

Among those low in academic involvement, 87% of students with high GPAs (4.78,9) remain in the original faculty compared to 79% of students with low grades (0,4.78). For both mark groups, the numbers transferring to other York faculties are low. Among those with low GPAs, 14% leave in poor standing.

If students of European background who scored high OAC marks (82.17,98.5) are examined, differences in enrollment statuses based on perceptions of perspectives found in class are observed; however, the relationship is not monotonic. Among students who strongly disagree, somewhat disagree, and neither agree nor disagree that a wide variety of perspectives are offered in classes, 86% remain in the same faculty. For those who somewhat agree, the figure increases to 92%. Among students who strongly agree, though, the figure drops slightly to 87%. As for students who go elsewhere in York, their percentage is approximately 4% across all categories. The greatest percentage of those who leave in good standing, 10%, is found among students who disagree that they encountered a wide range of perspectives; the smallest percentage, 3%, among those who somewhat agree.

Among students who disagreed, or neither agreed nor disagreed, that classes offer a wide range of perspectives, differences in enrollment statuses are related to the value placed on a York degree. To some extent, feelings along this dimension compensate for the lack of a wide range of perspectives offered in class. To clarify, students who believe that a York degree is somewhat or extremely important compare to students who strongly agree that a wide range of perspectives were found in classes. In each category, approximately 87% of students remained in the same faculty. Percentages moving to other faculties, or leaving the university, while not exactly the same, are comparable. By way of contrast, among students who state that a York degree is not at all important, only 81% stay in the same faculty and 18% leave in good standing. Among this group, only 2% transfer to another York faculty.

Conclusion

Three major conclusions can be reached in this section. First, race based differences in enrollment statuses do exist but they are not large. Second, the student retention model appears to be of little help in explaining enrollment statuses of students of non-European origins. Grade point averages and beliefs in the importance of a university degree are meaningful in this regard. By way of contrast, the statuses of European origin students are in part explained by some of the variables of the student integration model, however, relationships are not always monotonic. In addition, high standing on some variables appears to compensate for low standing

Table 4: Correct Classification

	Learning Sample	Test Sample	Correct Classification Rate
Same	86.4%	83.9%	97.1%
Other York	5.9%	4.0%	67.8%
Left Good Standing	4.0%	4.9%	77.5%
Left Poor Standing	3.5%	4.3%	77.1%
Overall			83.9%

on others. Third, social involvement helps explain the enrollment statuses of neither White nor non-White students.

Validity

The validity of the model outlined in Diagram 1 was tested in the following way. First, the sample was divided into a 'learning' sample and a 'test' sample. With the learning sample the same model was built as in Diagram 1. Next, the model was used to predict enrollment statuses in the test sample. The degree of correct classification when this procedure was followed is summarized in Table 4.

Overall, the model correctly classified 83.9% of the cases in the test file. The extent of correct classification, however, varied by the status under consideration. While the correct classification rate for students in the same faculty was 97%, it was a lower 68% for students who enrolled in another faculty at York. For those who left in good and bad standing the correct classification rate was 77% in each case. Correct classification rates such as these indicate a high level of validity for the model.

Explanations for the Student Interaction Model

Why does the student interaction model help explain the enrollment statuses of European origin students but not those of other backgrounds? As the number of European students was weighted back to the second largest group, students of Chinese origin, the explanation cannot be found in the numbers of individuals in the race categories (the greater the number in each group, the greater the probability of complex splits emerging in the analysis). A second possibility is that non-European origin students are marginalized and have minimal levels of contact, academic involvement, and so on. In order to test this possibility, students of different race were compared on the variables included in the analysis in Diagram 1. The results of this inquiry are summarized in Table 5.

Table data indicate that for the only pre-entry characteristic included in the model, OAC marks, race based differences are small and not statistically significant. By way of comparison, differences in contacts over the previous two months, an important variable in the student integration model, do significantly vary by race; however, while Black students have the lowest number of contacts (.44), the highest contacts are reported not by European origin students (.50) but by students of Chinese origin (.70). Moreover, the contacts of both East Indian (.55) and 'other' students (.57) are higher than those of European origin students. The results of a multiple range test indicate that the difference between no two racial groups is statistically significant.

Differences in academic involvement, another integration variable, are also statistically significant. This time, however, highest involvement scores (.09) are

Table 5: Model Variables by Race

	Black	East Indian or South Asian	Chinese	Other	European	All
OAC Average	77%	79%	78%	78%	78%	78%
Std. Dev.	5.2	5.6	9.5	8.4	6.8	7.8
Cases	111	72	224	220	226	853
Contacts 2 Months*	0.44	0.55	0.7	0.57	0.5	0.56
Std. Dev.	0.48	0.61	0.94	0.74	0.66	0.74
Cases	103	65	176	188	185	717
Academic Inv. 2 Months*	-0.02	0.09	-0.17	-0.03	0.03	-0.04
Std. Dev.	0.52	0.51	0.69	0.61	0.53	0.6
Cases	106	71	218	198	198	791
Wide Range Persp.	3.6	3.6	3.5	3.5	3.7	3.6
Std. Dev.	1.1	1	0.77	0.99	0.97	0.97
Cases	117	74	177	198	197	763
Degree Important	3.6	3.6	3.5	3.6	3.5	3.5
Std. Dev.	0.61	0.66	0.67	0.69	0.7	0.68
Cases	126	80	249	245	248	948
York Degree Important	2.2	2.3	2.2	2.1	2.1	2.1
Std. Dev.	1.1	1.1	0.91	0.97	0.98	0.98
Cases	126	79	247	242	247	941
GPA*	4.8	5.3	5	5.1	5.5	5.2

* F sig. at .05 or less

reported for students of East Indian origin, followed by European background students (.03). The scores for Black students (-.02) and 'others' (-.03) are only slightly lower than those of Europeans. Students who stand out the most, however, are those of Chinese origin who have very low rates of academic involvement (-.17). This time a multiple range test shows that there are statistically significant differences between, on the one hand, students of Chinese origin, and, on the other, students of European and East Indian descent.

Although perceiving that a wide range of perspectives was offered in classes helped explain the enrollment status of students of European background, as evident from Table 5, there are no statistically significant differences based on race for this variable. In essence, students in all groups had similar perceptions regarding the degree to which they encountered differing viewpoints. As such viewpoints would have included efforts to balance Eurocentrist with other perspectives this is an important finding.

Similarly, in terms of the importance of a degree in general and a York degree in particular (measures of goal commitment), differences based on race are small and not statistically significant.

Finally, there are differences in GPA based on race and the differences are statistically significant. For example, the lowest GPAs (4.8) were achieved by Black students. The highest (5.5), by students of European origin. In a covariate analysis (not shown) in which controls were introduced for OAC marks, this gap between Black and European origin students shrinks to the difference between 4.97 for the former and 5.38 for the latter. When converted into percentage terms, these figures represent average grades for Black students of 68% compared to 70% for those of European background.

Overall, these findings suggest that the failure of the student integration model to explain the enrolment patterns of non-European origin students cannot be attributed to their marginalization in terms of contacts, academic involvement, classroom climates in which only one viewpoint is given, and achievement. Nor can they be attributed to a lower degree of goal commitment. It would be wrong, however, to jump to the conclusion that the explanation for the enrollment patterns of non-European origin students can likely be found in variables such as self-confidence, realistic self-appraisals, preference for long term goals, and leadership, as found in the 'differences research' discussed earlier in this article. It may be that as in the United States such factors are important in understanding the enrolment behaviour of Blacks, but do they apply equally to groups such as Chinese? In Canada, further research is needed before answers to questions such as these can be provided. In the meantime, we are left with the inescapable conclusion that in at least one Canadian university the factors explaining enrollment statuses for European origin students are not the same as those helpful in understanding the statuses of others.

Conclusion

An examination of first year retention at York University indicates that in comparison to many universities in the United States, race based differences are slight. Moreover, a simple distinction cannot be made between those who stay, and those who leave, the university. Along many dimensions those who leave in good standing are more comparable to students who stay in the same faculty or move to another York faculty than they are to those who leave in poor standing. To the degree that it is often assumed that any form of attrition after first year represents institutional failure this is an important finding. More important, perhaps, is the finding that the factors explaining the enrollment statuses of non-European origin students are different than those that explain the enrollment of students with European origins. At a macro level, these findings may suggest that it may be necessary for the university to develop different retention strategies for different racial groups.

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